Point of Origin

The community is where awareness begins

Spring 2005

Looking Back 25 Years at the Oak Lake and Ekdall Church Fires

The fire service has changed to meet the challenge - has the public?

By Jim Gobel (WDNR Forestry Technician) and Jim Miller (WDNR Railroad Fire Prevention Specialist)

April 21 and 22 marked the 25th anniversary of two very significant wildfires in Wisconsin. During those two days in 1980, the Ekdall Church fire and Oak Lake fire burned over 16,000 acres in northwestern WI. More significant than the acres burned was that these fires destroyed 118 homes and cabins and 114 garages and outbuildings.

DNR file photo

Over 200 buildings were lost in the Ekdall Church and Oak Lake fires of 1980.

Just a few years earlier, from 1976-77, several significant fires burned across the state. The Five Mile fire in Washburn and Douglas counties burned 13,375 acres, the Saratoga fire in Wood county burned 6,159 acres, the Brockway and Airport fires in Jackson county burned 17,590 and 3,036 acres respectively, and the New Miner fires in Juneau county burned 3,177 and 1,551 acres. These severe fire years resulted in many lessons learned by the Department of Natural Resources (DNR) and local fire departments. While many changes and improvements started after this time, it became clear after the Ekdall and Oak Lake fires that the challenges of a wildland-urban interface fire (one that simultaneously involves structures and wildland fuels) would require that improvements be made in all facets of the fire service.

Setting the Stage

A few days in April changed the fire season in 1980 from routine to significant. The state was finally free of the drought of 1976-77. Precipitation in northwestern Wisconsin had been average in 1978-79 and while 1980 started out relatively dry, 11 days prior to the fires, the ground was completely snow covered. By April 15, the snow was long gone and a dry Hudson Bay high pressure system had stagnated over the area causing warmer than normal temperatures and very low relative humilities. By April 19, the fire conditions had gotten to the point that all burning permits were suspended. On April 20, severe fire behavior observed on several fires prompted DNR area leaders to begin the process of implementing "Emergency Fire Regulations." These regulations would have increased public awareness while prohibiting many activities that could start a wildfire. In 1980, the process of enacting Emergency Fire Regulations took time to be put into effect. Before the regulations could be put in place, the Hudson Bay high pressure system that been slowly baking northwest Wisconsin began to move out of the area and the last component needed to set the stage for large fires - wind - moved in.

Monday April 21, 1980

The Ekdall Church fire began around12:20 PM on the western side of Burnett county, 8 miles north of the village of Grantsburg. Eight minutes after the fire was reported, DNR and fire department units were on the scene of the fire, which was roughly 1.5 acres in size burning with extreme intensity in light scrub oak slash (debris left over from a wood harvesting operation).

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From the Editors...

Our purpose is to provide you with information about the services, products, and direction of the Wisconsin DNR and the various partners in protection, referring specifically to wildfire prevention, suppression, and outreach. Building partnerships is the key to success!

WISCONSIN DEPT. OF NATURAL RESOURCES

DIVISION OF FORESTRY

We in the Wisconsin DNR- Bureau of Forest Protection would like to extend an invitation to our fellow cooperators by soliciting information or topic ideas from our readers. If you have any ideas for the newsletter, contact:

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Visit our website for more information at:
www.dnr.wi.gov/org/land/forestry/Fire/

Tractor plow units were quickly put to work on each side of the fire (the "flanks"). As the first tractor plow was completing a fire break ("fire line") around the head of the fire, the operator observed several wind blown embers starting new fires ("spot" fires) across his fire line in a young pine plantation. The second tractor plow attempted to catch the spot fires. With the wind blowing the fire into the tops of the 20-foot tall pine stand, the second tractor plow operator was quickly over run by the fire and received second degree burns while making his escape on foot. The first tractor plow had continued around the rear of the fire and began building a fire break on the opposite flank of the fire. Within a short while this fire line was also lost to spot fires and the operator had to retreat to safety. Meanwhile, fire department and DNR wildlife units attempted to suppress the head of the fire along Hwy. F, but with the fire now a "crown fire" (burning in the tree tops) and southwesterly winds in excess of 20 mph pushing the fire, this tactic proved futile. Additional DNR resources that could have helped to initially contain the fire were tied up on another fire near Webster and a potentially major fire in Washburn county.

Over the course of the fire, shifting winds were a constant problem. There were several times when fire lines 3 tractor plow furrows wide (20+ feet) did not hold. By 3:00 PM the head of the fire was more than 4 miles from where it began and was spreading at 1,000-1,600 acres an hour. By 7:00 PM the head of the fire reached the Kohler Peat area adjacent to the St. Croix River. This very wet area largely stopped the forward spread of the fire and allowed firefighters to finally get a handle on the forward spread and complete fire lines around the fire perimeter.

In the end, the Ekdall Church fire ran a length of 9 miles in less than 8 hours. At its widest point, the fire front was 2.5 miles wide. Fifteen DNR tractor plow units, 7 fire departments, 27 private, county and National Guard bull dozers as well as scores of volunteers and cooperators from other county, state and federal agencies were utilized in containment of the fire. While 73 homes, cabins and outbuildings were destroyed in the blaze; another 65 buildings were saved directly from the result of firefighter actions.

The National Weather Service predicted that the winds would continue through the night, then increase in strength and shift to a northwest wind sometime the next morning. While some resources were sent home for rest, there was continuous mop-up and patrol of the fire lines throughout the night. Fire lines were strengthened and widened in anticipation of the wind shift. On Tuesday morning, staffing along the east flank was increased and although the wind did switch to the NW at up to 45 mph, no breakouts occurred after initial containment.

DNR file photo

Flying embers threatened structures 1.5 miles ahead of the Oak Lake fire.

The cause of the Ekdall Church fire was determined to be accidental in nature.

Tuesday April 22, 1980

Many people that had been released from the Ekdall fire were called out during the evening for other fires. The morning of April 22 found only skeleton crews staffing DNR stations in Washburn and Burnett counties as a majority of resources were committed back to the Ekdall fire. At 10:30 am, a fire was reported at the Penta Wood Products yard in Siren. Units from Webster, Spooner and the Ekdall Church fire were dispatched to this new fire.

At 11:26 am a fire was reported in Chicog Township in Washburn county, 11 miles west of the village of Minong. The initial response was everything that was available in the area, which included one DNR tractor plow unit from Minong, another enroute from Gordon, and a local fire department. Due to the location of the fire and the severe conditions, a task force of resources that had been assigned to the fire in Siren, an Incident Commander (IC - person in charge of the suppression effort), and resources from Douglas county were started in the direction of the fire. While enroute, the IC placed an additional order for 7 DNR Rangers and 10 DNR tractor plow units as well as additional fire departments and a full Incident Management Team to organize and direct the fire suppression effort.

Even with the meager resources that initially attacked the fire, a tenuous containment was obtained with a single plow furrow. Then the wind increased in strength and switched from a southwesterly to a northwesterly direction. The fire easily jumped Lower McKenzie Road and spread into mixed slash and standing jack pine timber. With the strong wind pushing the fire into the tops of the trees, it was quickly grew beyond the capability of the fire department and tractor plow unit to contain it before additional resources could arrive and provide assistance.

During the first 3 hours, the Oak Lake fire jumped the Namekagon River 3 times causing extreme difficulty in moving equipment to access the eastern side of the fire. This

problem was exacerbated by traffic jams of curiosity-seekers, fire equipment, and citizens evacuating the area. Fire lines along the flanks were difficult to hold. Spot fires were documented 1.5 miles ahead of the main fire. The wind kept smoke low to the ground making visibility, breathing, and evacuating citizens difficult for firefighters. The heavy smoke turned day into night as far away as 30 miles, where streetlights in Rice Lake came on in mid-afternoon due to the darkness.

By 3:30 PM the fire was more than 6 miles long and had a flaming front over 3 miles wide as it hit the northwest side of Island Lake. This is where most structures were lost. To add to the complexity of the incident, when the fire reached Island Lake and Big Casey Lake, the head of the fire split into 3 separate sections.

At 6:00 PM, the fire front hit Hwy. E, an east-west road about 3.5 miles south of Island Lake. Although several spot fires started south of the road, with much effort, Hwy. E held the main portion of the fire. As evening wore on, the winds and extreme fire behavior died down and firefighters continued working to get fire lines completed along the flanks and within scattered areas in the cluster of lakes.

When the fire was officially declared controlled 3 days later, it was estimated that the fire ran a distance of 11 miles in just over 6 hours. In the end, over 2,000 firefighters worked the Oak Lake fire including 23 fire departments, 52 DNR fire trucks, 30 DNR tractor plow units and 52 federal, county and privately owned bulldozers. Although 159 structures (homes, cabins & outbuildings) were lost in the fire, an estimated 254 were saved as a direct result of firefighter actions.

While a cause was never proved for the Oak Lake fire, it was thought to most likely to be equipment-related.

The aftermath and fire service today

Much has changed in the realm of wildland fire service in the 25 years since the Ekdall and Oak Lake fires, both on the part of the DNR and fire departments.

Communications

In 1980, there was a common radio frequency available statewide for fire emergencies. However, not every fire department had radios or only had a radio in their main apparatus. Other fire departments used CB radios. Too often firefighters and law enforcement officials did not have a reliable means of radio communication. After the fires of 1980, a radio grant program was set up by the DNR to help share in the cost of radios for fire departments. Additionally, as DNR radios were being phased out, they were made available to fire departments without radios. Today, in addition to every fire service vehicle being equipped with a radio that has the statewide frequency, 3 additional frequencies have been granted for emergency fire ground use statewide.

In 1980 if you needed the fire department you called the "fire bar" telephone line for your fire department. When you dialed the number it rang in every firefighter's house. You told one of the firefighters on the line where and what the problem was. They would then drive to the fire hall and turn on the fire siren to call all firefighters who missed the telephone call. Today, fire departments utilize 911 and the County Sheriff dispatch office to page members for a fire call and make requests for mutual aid from other departments.

Equipment

In 1980, many fire departments only had about two thirds of the apparatus they have in their fire halls today. Also, the majority of fire department "tankers" (used to haul water for structure fires) did not have any pumping capacity. Today, it is very rare when a fire department tanker does not have pumping capabilities. In a large wildland-urban interface fire, it is more likely that tankers will be used to protect structures. This was not possible in 1980.

Today, fire departments and DNR use a foam additive in the water they carry in emergency vehicles. The foam additive is tremendously helpful in protecting structures from catching fire and in extinguishing the fire. This foam additive was not available in 1980.

Maps

In 1980, maps showing the location of homes and cabins were not yet available. At the time, county snowmobile maps were used by fire departments. While these were helpful, the maps did not contain all roads. During the Ekdall and Oak Lake fires, the map problem was compounded as firefighters from outside the area, and not familiar with local roads, responded to assist with structure protection and fire suppression. Today, in areas where there is the possibility of a large wildland-urban interface fire, "structure maps" are provided to everyone involved in the incident. In addition to showing all roads, these maps show home and cabin locations, designated water sites, predetermined headquarter locations, and specific "zones" used in organizing structure protection during a wildfire.

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Organization and Training

Prior to the fires of 1980, it was common practice to use a nearby field as the Incident Command Post (ICP - where the primary command functions take place) during a large wildfire. Due to the complexity of these incidents, the DNR now uses designated buildings such as town halls and fire halls as ICPs. Improvements have been made at some of these pre-planned ICPs in the form of permanently mounted radio antennas and additional phone lines that can be used in an emergency.

No longer is the Incident Management Team only made up of DNR personnel. Officers from local fire departments oversee the protection of structures in the path of the fire. State, county, and local law enforcement agencies are part of the team as well, handling evacuation, roadblocks, and investigation of how the fire started. Other organizations such as the Wis. Dept. of Emergency Management, county agencies, ambulance services, ham radio groups and others are often are a part of an IMT. Today, mock wildfires are held across the state to exercise the IMT organization.

County wide fire department associations were organized in the years following the Ekdall and Oak Lake fires. These associations help develop closer working relationships between fire departments and enable them to cost share on training and equipment purchases.

Training is held each year between DNR and local fire departments regarding wildfire tactics, safety, structure protection and the Incident Command System (organizational system used nationally to manage any major event).

At the time of the Ekdall and Oak Lake fires, firefighters working to protect structures had only their own experience and ingenuity to guide them safely through their task. Today, specific structure protection tactics have been developed and practiced to make the protection of structures threatened by a wildfire more effective and safer for firefighters.

While enacting Wisconsin's Emergency Fire Regulations is still a tool used by fire managers, today, the process to enact them has been streamlined so that it is easier and quicker to put into effect.

Fuels

Much of the area around the Ekdall and Oak Lake fires has now regenerated to a jack pine forest type. Today, these stands are about 25 feet tall and create a much more hazardous situation for firefighters on the ground.

Wildland-Urban Interface

Residential and recreational properties have continued to increase in the fire areas as they have in rural areas across Wisconsin and the nation. It is estimated that there are nearly twice as many structures in the fire areas today that there were in 1980.

Much research has been done across the country in the last two decades regarding wildland fire. It was once believed that structures in the path of a wildfire were mostly ignited by the passing fire front. We now understand that most homes lost in a wildfire are ignited by flying embers that land in firewood stacks or piles of leaves and pine needles accumulated on a roof, in rain gutters, or under decks.

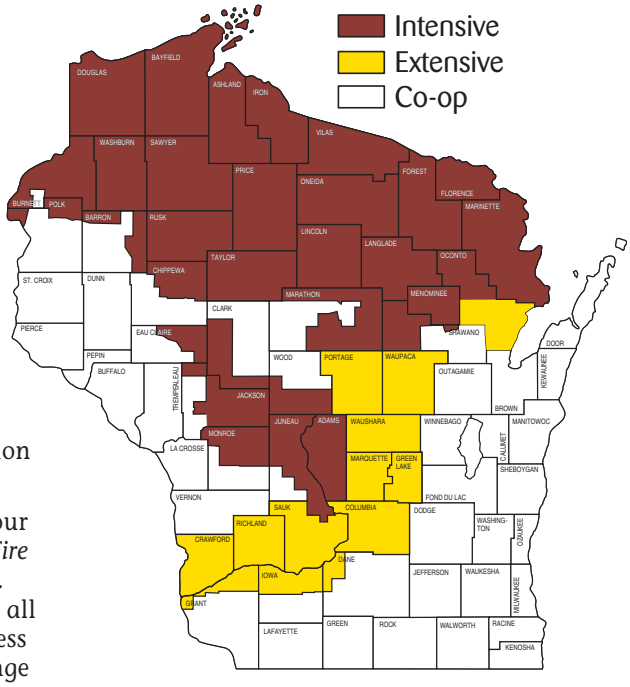
Even with improvements made over the last 25 years, firefighters still understand that homes will be lost during wildfires. In some areas, the large numbers of structures present combined with the intensity and quickness of a spreading wildfire make it impossible for enough structure protection forces to safely prevent this. In addition, characteristics of a property such as poor access for large fire trucks, heavy forest fuels within 30 feet of the structure, un-maintained yards, and accumulation of flammables on and around the structure often doom the property to damage or destruction even with firefighter protection.

It has been proven in wildfires across the country that actions taken by a homeowner before a fire to "firewise" their property plays the largest role in their home surviving a wildfire. While much has changed in the fire service to improve safety and effectiveness on the fire ground, the sad fact is that many homeowners do little or nothing to protect their home in the event of a wildfire.

New Fire Department Wildland Fire Training for Cooperative Areas

The WI DNR now has instructors available to teach wildland fire training to fire departments in cooperative fire protection areas of the state. Recent surveys of cooperative area FDs found that 56% had not received wildland fire training in the last three years and that 33% had **never** received any wildland fire training. Those same surveys indicated that fire departments in cooperative areas of the state respond to an average of 3,430 wildland fires burning 24,550 acres every year in Wisconsin. This training effort is focused on assisting fire departments to safely and efficiently suppress those 3,500 wildland fires that occur every year in the cooperative areas of Wisconsin. The Division of Forestry is funding this initiative.

Forest Fire Protection



These instructors will be teaching the 8-hour WI DNR course, *"Introduction to Wildland Fire Suppression for Wisconsin Fire Departments"*. This course is designed to offer firefighters all the information they need to safely suppress wildland fires in Wisconsin. A broader range of wildland fire topics is also available as requested by fire departments to meet their needs and time constraints.

If your fire department is interested in this **free** wildland fire training, please contact Chris Klahn, Cooperative Fire Specialist at (608) 297-2214 to be scheduled for this valuable training.

Introduction to Wildland Fire Suppression for Wisconsin Fire Departments

This eight-hour training class is designed to give WI fire departments a background in wildland fire suppression and improve the efficiency and safety of fire department personnel operating on wildland fires.

Unit 1 – Introduction - describes the background and rationale for this training for fire departments.

Unit 2 – Wisconsin Forest Fire Laws – describes and explains the WI State Statutes that apply to wildland fires.

Unit 3 – Fire Behavior – describes how and why wildland fires burn given weather and fuel conditions.

Unit 4 – Wildland Fire Size Up – describes the initial size up procedure and radio communications.

Unit 5 – Wildland Fire Suppression Tactics – describes suppression tactics and techniques used in Wisconsin.

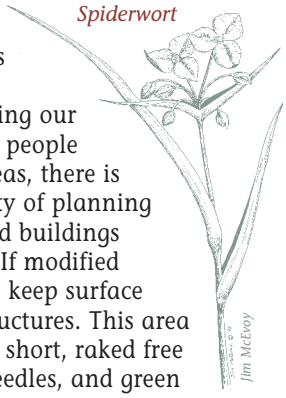
Unit 6 – Mop Up – describes tactics and techniques to secure a wildland fire from escaping after control.

Unit 7 – Incident Command System – describes an overview of the Incident Command System used by WI fire departments.

Unit 8 – Wildland Fire Safety – describes safe operating guidelines on wildland fires and includes a case study of a WI firefighter fatality.

Firewise Landscaping

By Jolene Ackerman, WDNR Wildland-Urban Interface Coordinator



Spiderwort

As the growing season approaches, it's time to consider establishing or refreshing our lawn and gardens. For people living in fire-prone areas, there is the added responsibility of planning the area 30 feet around buildings with wildfire in mind. If modified properly, this area can keep surface fires from reaching structures. This area should be kept mowed short, raked free of fallen leaves and needles, and green throughout the growing season. Plantings should be carefully spaced and have more fire-resistive qualities. Remember that deciduous plants, shrubs, and trees are generally more fire-resistive than evergreens.

All plants will burn under extreme fire weather conditions such as drought. However, plants burn at different intensities and rates of consumption. Fire resistive plants burn at a relatively low intensity, have slow rates of spread, and short flame lengths. The following are characteristics of fire resistive vegetation:

- Growth with little or no accumulation of dead vegetation (either on the ground or standing upright).
- Non-resinous plants.
- Low volume of total vegetation (e.g. a grass area as opposed to a forest or shrub-covered land).
- Succulents or plants with high live fuel moisture (plants that contain a large amount of water in comparison to their dry weight).
- Drought tolerant plants (deeply rooted plants with thick, heavy leaves).
- Plants requiring little maintenance (slow growing plants which, when maintained, require little care).
- Plants with woody stems and branches that require prolonged heating to ignite.


Trillium

Dwarf Lake Iris


Photo by Bob Queen.

Plants around the home should be well-spaced and have fire-resistive qualities.

Some examples of fire resistive vegetation adapted to Wisconsin's climate are:

Groundcovers: lily of the valley, wild strawberry, blue phlox, trailing arbutus, wintergreen, gay-wings, pink pyrola, white trout lily

Herbaceous plants: yarrow, columbine, delphinium, iris, spiderwort, lupine, geranium, trillium, Dutchman's breeches, Turk's cap lily, wood lily, lady fern

Shrubs: dogwoods, speckled alder, currants & gooseberries, cranberry bush, witch hazel

Trees: ash, willow, hawthorn, aspen, plum, cherry, birch, cottonwood, maples, oaks, beech

Remember to keep the area 3 to 5 feet around all buildings completely free of all vegetation and flammable objects. For additional protection, create fuel breaks by incorporating gravel, rock, brick, paving or a water feature into your landscape design. Keep all tree limbs pruned back at least 10 feet from all structures. Prune conifers up to at least 10 feet from the ground. Keep firewood and other flammable materials away from buildings.

Lupine

Once you have reduced fuels 30 feet around your home, you must maintain the area or risk losing the benefit of its protection. Keep a schedule of seasonal maintenance where roofs and gutters are cleaned and leaves and needles are raked. Remember that spring is when most wildfires occur in Wisconsin; clean up at this time of year is essential.

Firewise Online Chats

The 2005 Firewise online chats include topics on developing Firewise Communities USA projects, an introduction to ArcView, dealing with absentee landowners, landscape design and homeowner issues. Log on to http://www.firewise.org/chat/ Please note that you will have to create a New User Account before you can log on.

Mark your calendars!

- February 16, 1:00 p.m. EST
- March 16, 1:00 p.m. EST
- April 13, 1:00 p.m. EST
- May 18, 1:00 p.m. EST
- June 15, 1:00 p.m. EST
- July 20, 7:00 p.m. EST
- August 17, 7:00 p.m. EST
- September 21, 1:00 p.m. EST

October 19, 1:00 p.m. EST

- November 16, 1:00 p.m. EST

More than 90 communities in 26 states had Firewise Communities/USA recognition by the end of 2004. To learn more about how your community can be recognized, visit: www.firewise.org

Links:

Wildland-Urban Interface e-newsletter available

"Interface South" was developed by the USDA Forest Service to heighten awareness of and provide information about wildland-urban interface issues. Critical interface issues include wildland fire, watershed health and management, land use planning and policy, wildlife conservation and management, and many more.
http://www.interfacesouth.org/swuinet.html

US Fish & Wildlife Service Region 3 new web site

http://www.fws.gov/midwest/Fire/

Firecompanies.com

This web site is designed and operated by firefighters.
www.firecompanies.com

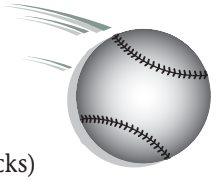
Firefighting.com

More of a grassroots website. Allows you to access The Firefighters Worldwide Radio Network radio show.
www.firefighting.com

Firewise

A resource for people who live in the wildland-urban interface. Plenty on the website for the firefighter. You can download issues of Wildfire News and Notes newsletter.
www.firewise.org

Strike-Out Wildfire on July 26th!



Are you a major wildland fire stakeholder in your community? Would you like more information on how to assist your community in becoming more 'Firewise?' Come out to Miller Park on July 26th for a brief seminar on how you can get your community more involved in the Firewise Wisconsin program!

Listen to wildland fire experts talk about the Firewise Communities USA Recognition Program, how to protect your home and community from wildfire, learn about how wildland fire behaves and talk to other Wisconsin community stakeholders about the program.

The workshop is **FREE** of charge and will include a complimentary tailgate and tickets to that nights game (Milwaukee Brewers vs. Arizona Diamondbacks) at 7:05 p.m. Just bring your willingness to go back home and become an ambassador for Firewise Wisconsin!

The workshop is limited to one person per organization or township with only 100 slots available on a first-come, first-serve basis. Priority will be given to those who assist communities in high fire-prone areas (based on vegetative cover type, number of structures at risk, and fire history). Fill out the attached mail-in form and mail it in to reserve your spot! A confirmation and package with more details will be mailed to you direct.

Clip and mail to:

Catherine Regan, Wildfire Prevention Specialist
P.O. Box 7921
Madison, WI 53707-7921

catherine.regan@dnr.state.wi.us

FIREWISE COMMUNITIES
www.firewise.org

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Township/Community/Organization You Are Representing

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2005 Wisconsin Grants Update

The 2005 Forest Fire Protection and Volunteer Fire Assistance grant application deadline, July 1, 2005 is rapidly approaching. Applications numbers are expected to be up for both grant programs this year, as Wisconsin Fire Departments and County Fire Associations face financial challenges from traditional funding sources.

The Volunteer Fire Assistance (VFA) grant program is open to all County Fire Associations and newly organized fire departments. This grant program is a 50% cost share grant utilizing federal dollars. The maximum grant awarded is $10,000 ($20,000 project proposal). This year, the funding level is $136,000. There are several changes in the program this year. Only grant proposals with a wildland fire emphasis and with county wide impacts will be accepted. The awardees will be notified in October when the federal dollars are released to the state.

The Forest Fire Protection (FFP) grant program is open to all Fire Departments in Wisconsin with wildland fire suppression agreements with the DNR. The FFP grant program is also a 50% cost share program utilizing both state and federal monies. The objective of the program is to increase wildfire suppression capabilities and safety. The maximum grant awarded is $10,000 ($20,000 project proposal). This year the funding level is $775,000. FFP grant awardees will also be notified in October.

Please consider applying for these grant programs to improve your departments' capabilities, efficiency and safety on wildland fires. Both grant applications will be sent out May 1, 2005. The application, cover letter and eligibility list will also be posted on the DNR webpage under the Division of Forestry, Bureau of Forest Protection and then Fire Departments. Plan now to take advantage of these valuable grant programs.

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Designed by L. Pohlod, Blue Sky Illustration & Design, LLC